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## Algorithm for Decision Making on Outsourcing Implementation and Assessment of the Effectiveness of its Use

<sup>1</sup> **Kaharova Nilufar Yerkijonovna**

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**Annotation:** The benefits of outsourcing are given. Models for assessing the effectiveness of outsourcing in railway transport industry enterprises are presented. An outsourcing decision-making algorithm was built.

**Key words:** outsourcing; efficiency indicator; business processes; decision making.

<sup>1</sup> Tashkent State Transport University, basic  
doctoral student

In the modern world, practice indicates a constantly changing ratio of market positions of economic entities. In this regard, organizations that do not change management principles and improve production and marketing processes are at a high risk of losing their leading position compared to competitors.

Outsourcing, both in the industry of Uzbekistan in general and in the enterprises of the Uzbekistan Railways Joint Stock Company, is similar to enterprises in developed economies in terms of the level of use.

The main criteria for using outsourcing are to reduce costs (at the expense of more efficient outsourcing) and to increase the quality of services provided. The main condition for this is to carry out the necessary competitive procedures in the process of selecting third-party organizations [3].

The advantages that O'JSC enterprises can get when transferring non-core functions (or auxiliary activities) to a third party are:

1. concentration of personal resources in the main activity.;
2. the cost of outsourced processes is reduced;
3. use of modern technologies.;
4. reliability.;
5. transfer of responsibility for the implementation of a certain process, in other words, a risk diversification strategy between the enterprise and the outsourcer;

6. freedom to invest in enterprise infrastructure, because outsourcing reduces the need to direct investments to support secondary functions and activities that do not provide the main part of the organization's profit.

The AVS method (Activity-based costing), functional accounting, i.e. cost accounting by functions, can perform this task. shows the operations from the point of view of accounting and calculation of objects [2].

The AVS method is based on the theory that products consume activities, and activities consume resources [9]. The implementation of the AVS method involves the identification of all types of activities and the determination of average costs for each of them. Costs for all types of activities related to product production are the product of average costs per unit of time for each type of activity and the duration of a specific type of activity.

The AVS method helps to make many decisions on cost optimization (logistics outsourcing of business functions, justifying the economic size of the order), as well as creating a proven assortment policy, increasing sales profitability and increasing costs, balanced indicators for the enterprise allows you to manage your business by creating a card. Often, the implementation of the AVS method can be "reluctant" due to the difficulty (the process of describing business functions and their time).

The advantages of taking into account process costs can be seen in the example of calculating the optimal economic order volume determined by the formula.

$$EOQ = \sqrt{\frac{2C_0 D}{S_i U}} \quad (1).$$

here EOQ is the economic order quantity;  $C_0$  – price of each order;  $S_i$  is the coefficient of costs of keeping reserves;  $D$  – annual sales volume (in units);  $U$  is the cost per product unit.

Using this formula, you can quickly determine the best order quantity that provides the lowest total cost. However, practice shows that such a calculation is rarely used, because most enterprises do not have complete information about the price of a single order [5].

The final stage includes the decision to outsource certain processes based on the calculation of the economic efficiency of outsourcing and the comparison of potential risks and advantages of the outsourcing strategy [6, 25 p.]. When evaluating the economic effectiveness of outsourcing, all types of risks arising from the transfer of business processes to a third party are taken into account.

Among the methods of evaluating the effectiveness of outsourcing, two main ones can be distinguished: single-criteria and multi-criteria.

A single criterion refers to the extent to which outsourcing is implemented in only one of the company's characteristics, often it is financial results, and additional income or savings obtained from the use of outsourcing serve as an evaluation indicator. The multi-criteria method involves evaluating the impact of outsourcing on various factors of companies' activities [4, 88 p.].

The single-criteria method was developed during the period of the planned economy, when the country had a similar concept to the term "outsourcing" called "change in production specialization". A formula was used to calculate the savings due to changes in specialization

$$Io'zg = [TN - (N + T)] C_1 \quad (2)$$

Here  $Io'zg$  is saving money from changing the specialization of production;  $C$  - production cost for the period before handing over the production of the product to a third party, monetary unit.;  $C$  - the price of the finished product determined by a third party, monetary unit.;  $T$  - transport costs for delivery of the product from the contractor to the customer's enterprise, money unit.;  $K_1$  is the number of product units received from an external contractor for the reporting period.

This formula was then modified to account for changes in the value of money over time:

$$\Theta_a = \sum_{i=1}^n \frac{S_i - P_i}{\left(1 + \frac{d}{100\%}\right)^i}, \quad (3)$$

Here,  $E_a$  is the economic effect of outsourcing, money unit.;  $n$  – estimated duration of the outsourcing period;  $S_i$  – potential costs of the process with own funds in  $i$ -year, den. units;  $P_i$  – the value of the process performed by the outsourcer in the  $i$  year (the cost of the outsourcer's services, transportation costs, the costs of the client's interaction with the outsourcer, etc.), monetary unit.;  $d$  – discount rate, %.

Despite the fact that formula (3) makes it possible to more accurately calculate savings (taking into account changes in monetary value) as a result of the introduction of outsourcing, there are no significant changes in determining the structure of economic efficiency. from using outsourcing. The inclusion of two additional terms in formula (3) can be considered an important addition:

$$\Theta_a = \sum_{i=1}^n \frac{S_i - P_i}{\left(1 + \frac{d}{100\%}\right)^i} - C_0 + D_0, \quad (4)$$

where  $C_0$  is one-time costs related to outsourcing, money. (including, for example, the amount of compensation paid to dismissed employees);  $D_0$  is a one-time income associated with outsourcing, a monetary one. (for example, proceeds from the sale of a closed business unit).

These additions make it possible to understand that when outsourcing is introduced, the company is restructured, the internal division that previously implemented the processes should be terminated, and now they will be transferred to the outsourcing company [10].

When analyzing the expediency of using outsourcing using a one-criteria method, important risks included in the calculation, such as loss of authority in the functions entrusted to the outsourcer, dependence on a third party, and loss of complete control over product quality, are not taken into account. Determining the shortcomings of single-criteria methods served as the basis for the formation of a multi-criteria method. So, for example, one approach looks like this:

$$E = \sum_{i=1}^n W_i (KA_i - KB_i), \quad (5)$$

where  $Y_e$  is the outsourcing effect;  $n$  – the number of evaluated criteria;  $W_i$  is the weight of the  $i$ -criterion in the general assessment;  $KA_i$  – the value of the  $i$ -criterion after the introduction of outsourcing;  $KB_i$  is the value of the  $i$ -criterion before the introduction of outsourcing. Since different types of indicators are used in the formula (5), they must first be reduced to one dimensionless scale, as a result of which the impact of logistics outsourcing calculated by this method is also expressed in dimensionless value. Analyzing formula (5), it can be concluded that multi-criteria methods also have disadvantages. One of these disadvantages is their inherent "compensation problem".

Another significant shortcoming is the final score. This criterion is calculated using a multi-criteria method with no economic content, which is clear for the management team to make decisions based on the cost, savings, profit or business value category.

The criteria included in the multi-criteria method should objectively describe the state of the enterprise's internal environment and its interaction with the external environment (for example, competitors, suppliers, marketing intermediaries, consumers, government authorities and public opinion).

Next, it is necessary to introduce a single measurement system (using the method of expert evaluations) to compare all the included  $K_j$  criteria and determine the weight of each criterion. Then the state of the organization (in terms of the inherent characteristics of the internal environment and the quality of interaction with the external environment) should be evaluated according to the following formula:

$$S_{BA} = \sum_{i=1}^n W_i K B_i, \quad (6)$$

here  $S_{BA}$  is the indicator of the state of the company before outsourcing; the remaining symbols are as given in formula (5). Then it is important for the enterprise to determine the minimum uncompensated decrease  $MNC_i$  for each  $K_i$  parameter. If, according to assumptions, the value of the relevant  $K_i$  parameter will decrease by an amount equal to or more than  $MNC_i$  as a result of the use of outsourcing, it is not appropriate to introduce outsourcing, because in all other criteria, the  $K$  included in the model cannot compensate for the deterioration of the value of this parameter, which is not based on facts. – this is the management meaning of the  $MNC_i$  indicator. Also, the value of the  $MNC_i$  should be expressed based on expert assessments.

After that, experts should find the predicted values of the parameters of the state of the company  $K A_i$ , taking into account the use of outsourcing, and determine the final value of the integral indicator of the state of the enterprise:

$$S_{AA} = \sum_{i=1}^n W_i K A_i, \quad (7)$$

where  $S_{AA}$  is an indicator of the state of the enterprise after the introduction of outsourcing; the remaining symbols are similar to those used in formula (5).

The value of  $\Delta S$  is the gross (gross) effect of outsourcing:

$$\Delta S = S_{AA} - S_{BA}. \quad (8)$$

Formula (8) above is similar to formula (5), but it should be noted that the indicator calculated in this way should be called the gross effect (gross effect) rather than just the effect, because the introduction of outsourcing is correct. cannot be the basis for making a decision on, the mechanism of mutual compensation of the conditions included in it represents the final general change of state (see formula (5)).

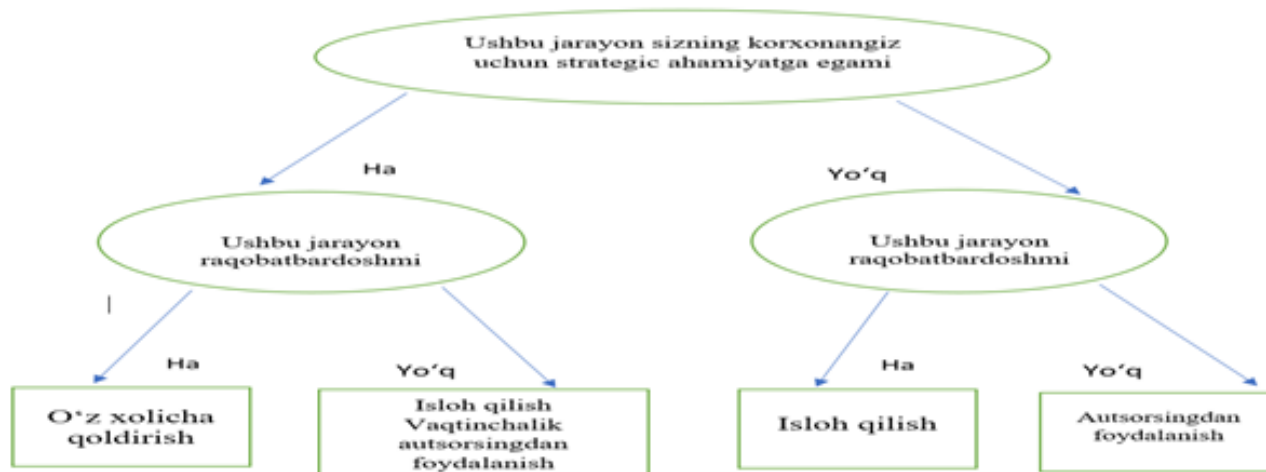
It should be noted that single-criteria and multi-criteria approaches should be used in justifying the decision to use outsourcing. The reason for this is that the first, as shown above, has more visibility, and the second gives a more complete sense of how the state of the enterprise will change as a whole. At the same time, there is a need to develop an alternative model for evaluating the effectiveness of outsourcing. [4, 92 p.].

The conclusion about the effectiveness of the decision made can be an analysis of the results of outsourcing, as a result of which it is possible to identify the existing problems in the development of the entire business system and all possible ways to solve them. Management errors in the implementation of

outsourcing can and should be fully corrected. Errors can occur both as a result of improper execution of the logistics outsourcing contract and as a result of improper planning in the initial preparatory stages of the project [8,165 p.].

The paradigm of such a comparison considering outsourcing is that indicators have immeasurable properties, both quantitative and qualitative.

The algorithm for the implementation of the procedure for the construction and use of the outsourcing evaluation system will look like this (Fig. 1).



**Figure 1. Algorithm for the implementation of the procedure for the construction and operation of the outsourcing evaluation system**

The first is the familiar balanced scorecard, which reflects the productivity and efficiency of infrastructure elements, the length of logistics cycles, and the level of customer satisfaction. Such a system is called a system of logistics-marketing indicators. It was built to support the decision of an operational and strategic nature for the management of the outsourcing company.

The second is a system of modified balanced indicators reflecting the effectiveness of the investment direction. It is called investment and shows the balance between the business functions of the outsourcer and the requirements of the owners - the financial aspects of the operation of the route. This system was created primarily for owners who have invested in the development of a new route.

Both systems work in parallel. Evaluation indicators can be used both in one system and in two systems - disclosed and filled. This division of the balanced scorecard structure allows measuring the efficiency of all aspects of the process, as well as a very scalable and simple operation, which in turn is important for local enterprises. [1, 72 p.].

The experience of Western companies shows that, in addition to cost reduction tasks, outsourcing increases the productivity of service and support operations, raises their quality level and allows them to focus on their own advantages, which in turn increase the return on assets and cost of business value.

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